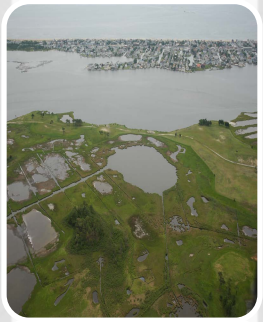
SEA LEVEL RISE MAPS AND GUIDANCE FOR WETLANDS CONSERVATION AND RESTORATION



SEA LEVEL RISE MAPS AND GUIDANCE FOR WETLANDS CONSERVATION AND RESTORATION

YES, SHE REALLY IS **STILL** TALKING ABOUT SEA LEVEL

CLIMATE IMPACTS IN DELAWARE

Increasing Temps

Heavy Precipitation

Sea Level Rise

WETLANDS AND CLIMATE CHANGE

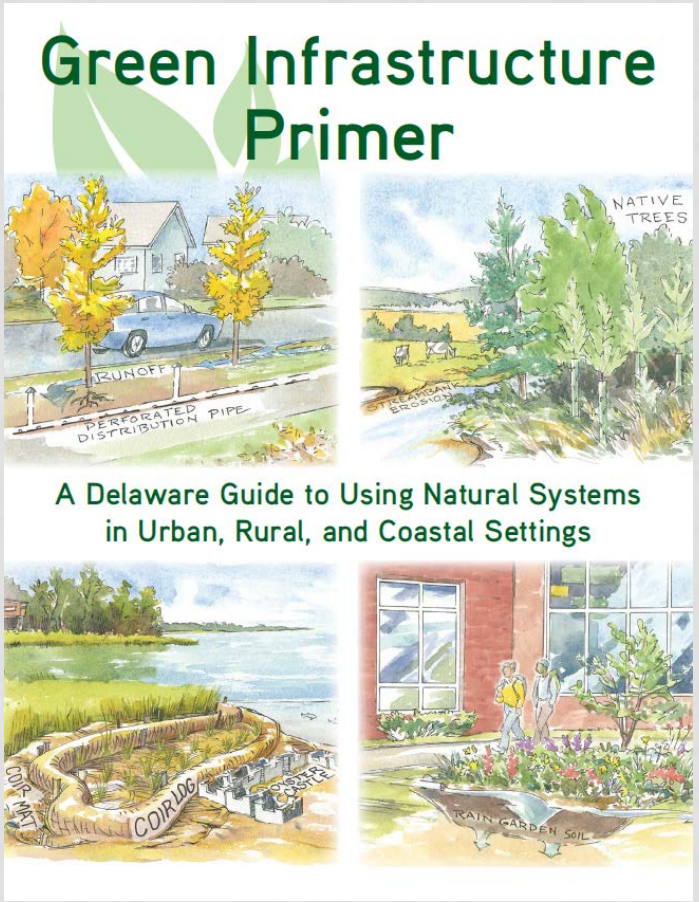
- Threatened by climate impacts
  - Sea level rise
  - Saltwater intrusion
  - Heat
- Part of the Climate Solution
  - Capture and store carbon
  - Provide flood attenuation

EXECUTIVE ORDER 41 PREPARES THE STATE FOR CLIMATE IMPACTS

- Requires State Agencies to:
  - Develop policies and plans
    - GHG Emission Reductions
    - Agency Adaptation recommendations
  - Take on-the-ground action
    - Avoid new projects in flood prone areas
    - Plan for future flood levels in projects
    - Use green infrastructure where possible

HELPING YOU HELP US

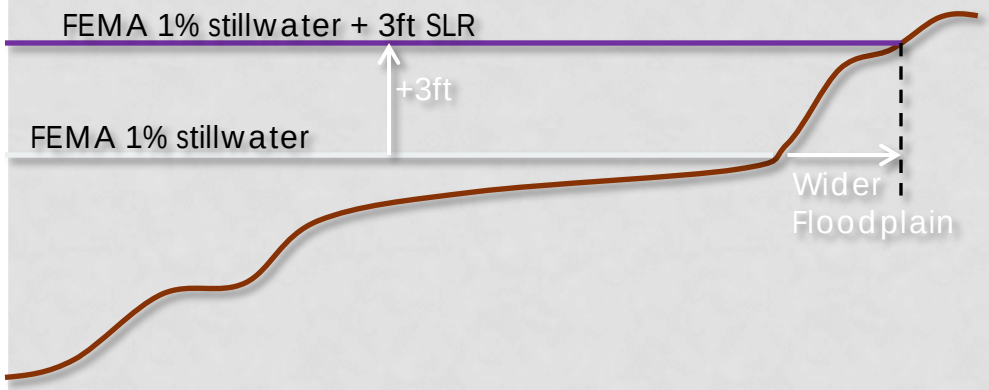
- *Avoid Projects in flood prone areas:*
  - **Flood Avoidance and Design Instructions**
- *Use Green Infrastructure*
  - **Green Infrastructure Primer**
- *Plan for future flood levels*
  - **Flood Risk Adaptation Map (FRAM)**

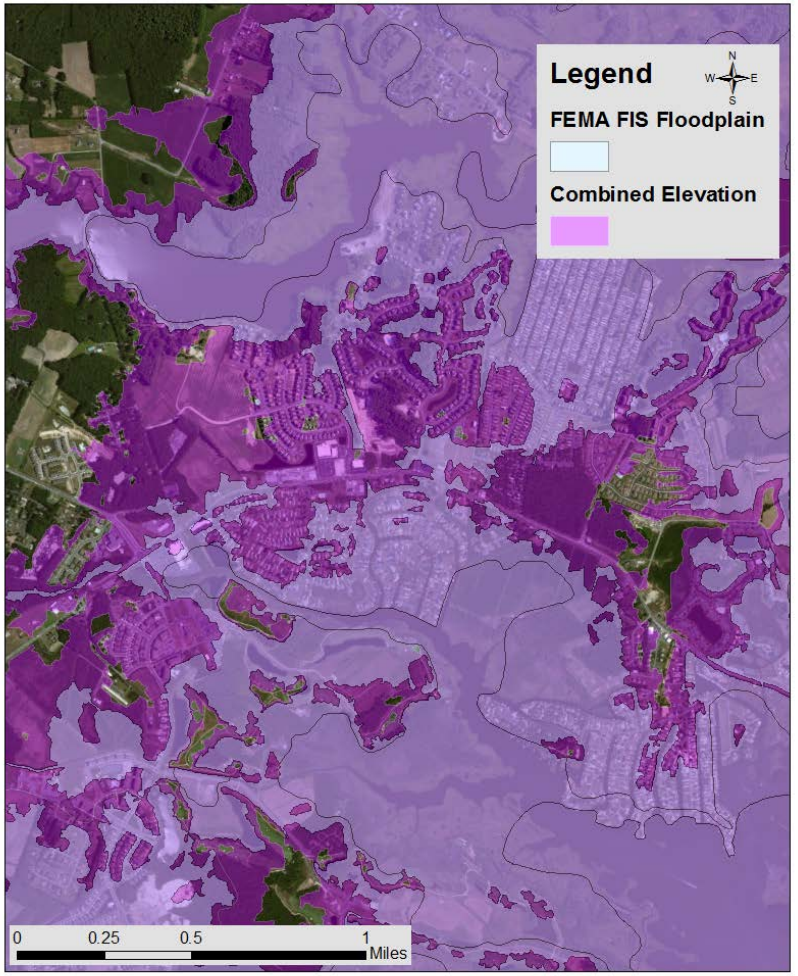


Visit Jennifer de Mooy at Poster #5 for more info and to pick up a copy!!

FLOOD RISK ADAPTATION MAPS (FRAM)

- *Depicts the 1% chance floodplain assuming 3' of sea level rise*
  - *Many caveats…*
- *Planning Tool*
  - Use with Floodplain and SLR maps to assess sites





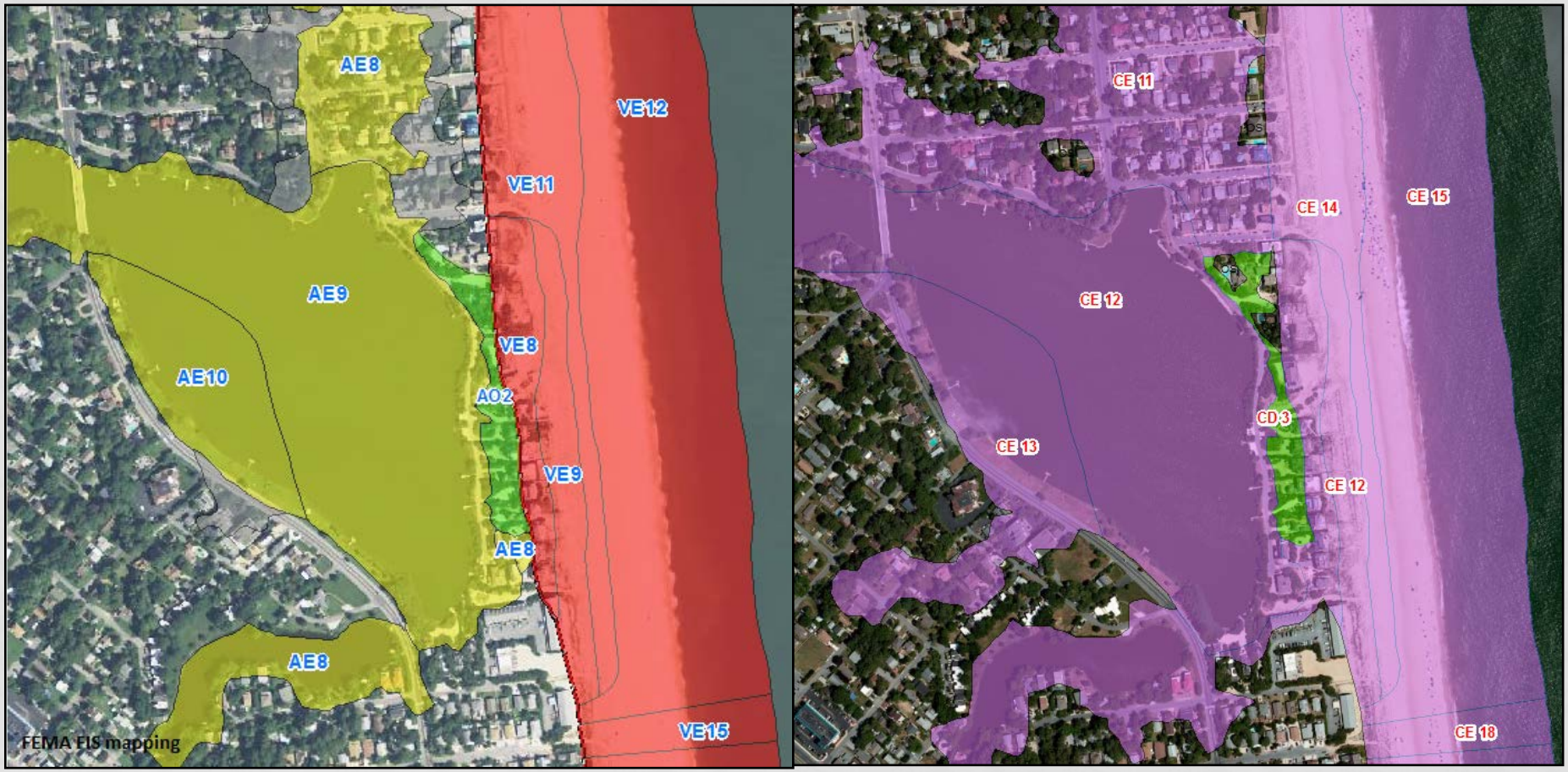
USE FOR WETLANDS CONSERVATION AND RESTORATION

- Planning and Prioritizing
  - Purchases and easements
  - Restoration sites
- Engineering and design
  - Elevations
  - Plant selection
  - Avoidance of flood risk for ancillary structures
  - Design of ancillary structures

FRAM: LARGER FLOODPLAIN, HIGHER FLOOD ELEVATIONS/FLOOD DEPTH AND DIFFERENT ZONE DESIGNATIONS

Left figure: FEMA FIS map

Right figure: FRAM

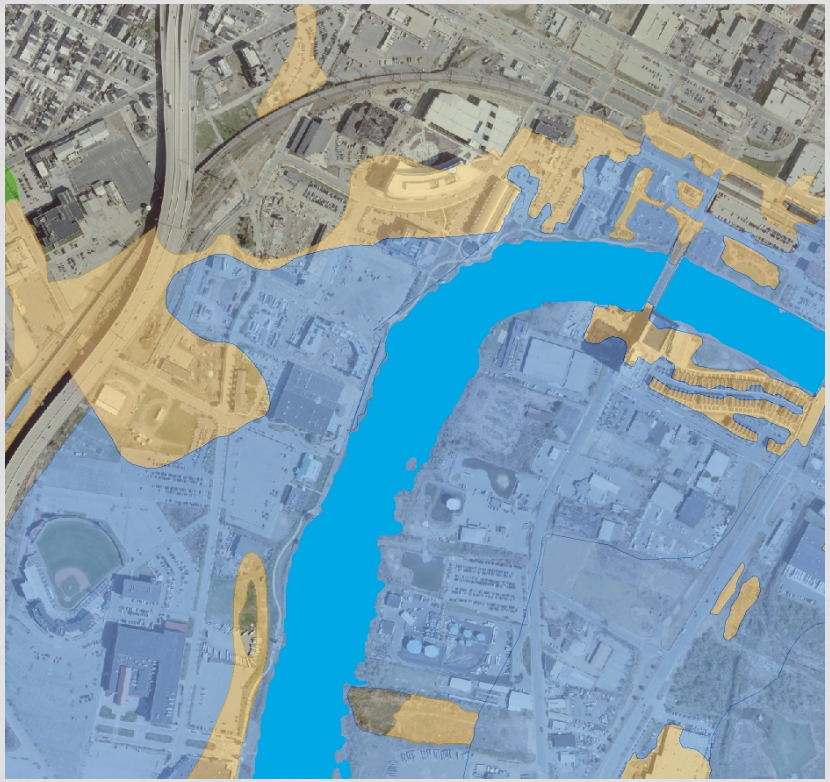


LIMITATIONS OF FRAM

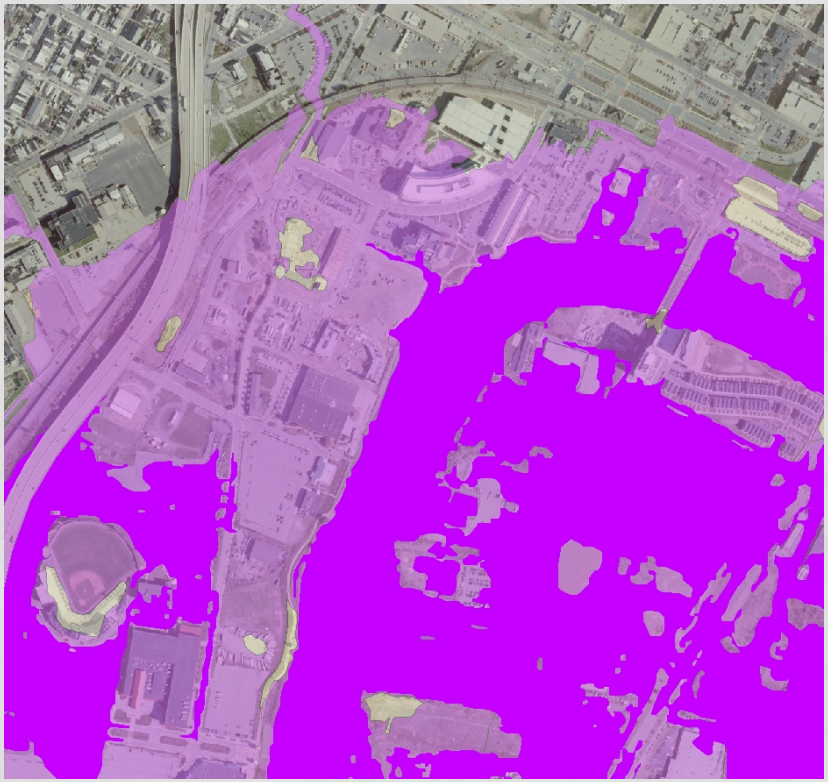
- Greater **wave action** further inland due to increased flood depths not modelled
- More **severe erosion** due to sea level rise and greater waves action not studied
- **Human management** actions not accounted for
- Long-term **shoreline changes** not accounted for

WILMINGTON'S RIVERFRONT

MHHW and Floodplain
Today

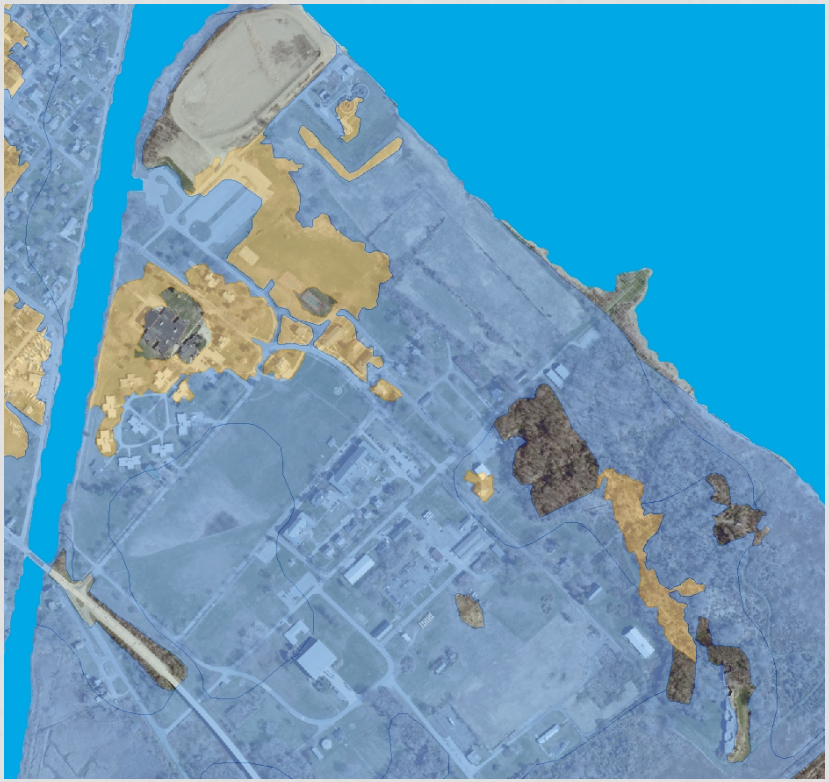


MHHW and Floodplain
3' Sea Level Rise



FORT DUPONT, DELAWARE CITY

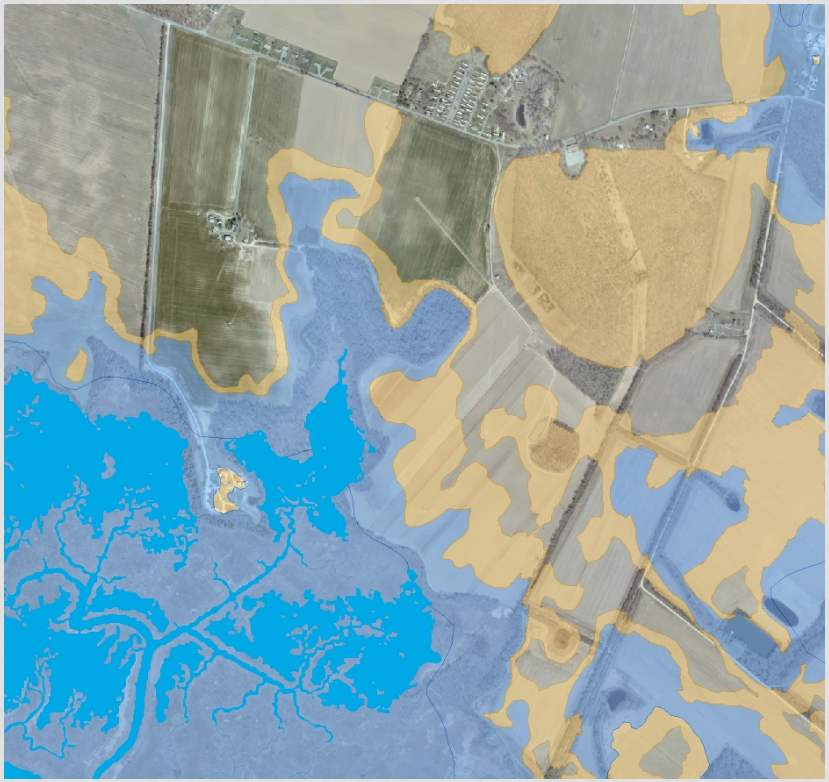
MHHW and Floodplain
Today



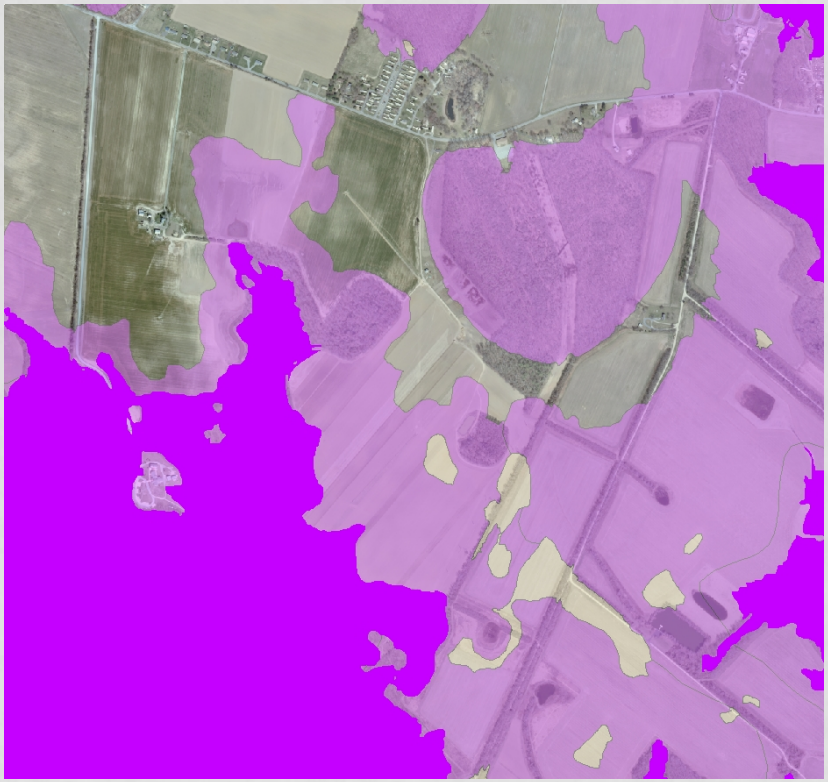
MHHW and Floodplain
3’ Sea Level Rise

ST. JONES RESERVE AND VICINITY

MHHW and Floodplain
Today



MHHW and Floodplain
3’ Sea Level Rise



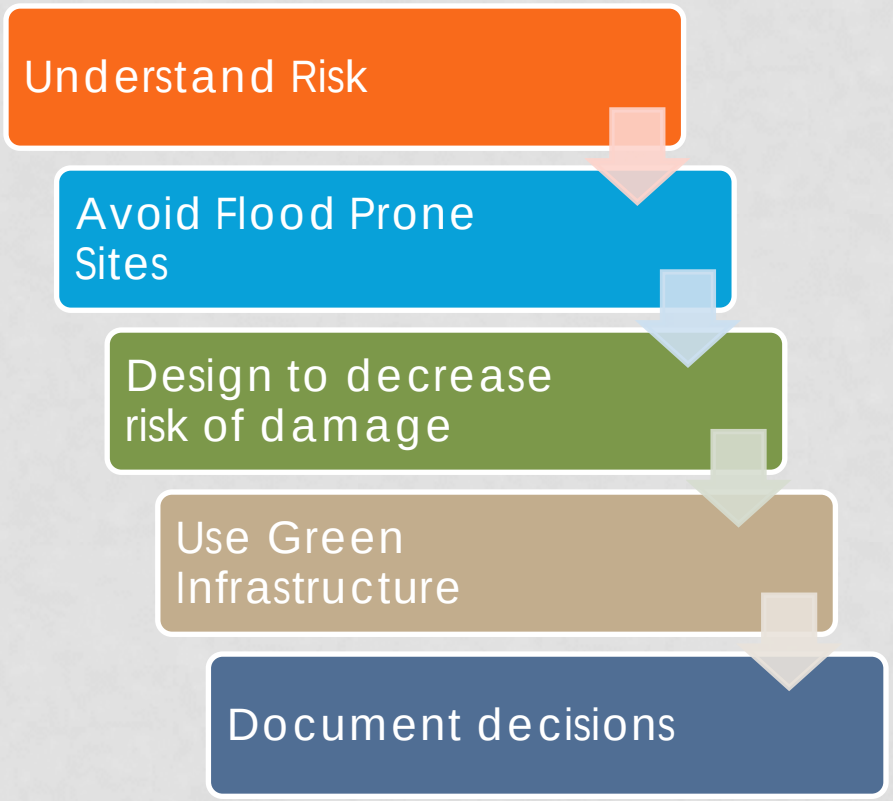
WOW, WHAT AN AMAZING MAP! WHERE CAN I GET IT?

- GIS layers available on First Map to state users
  - Including metadata and technical companion
  - Available for public upon request
- Web/map application for state agencies in future

BUT WAIT, THERE'S MORE

Avoiding and Minimizing Flood Damage to State Assets: A Guide…

- To be final in March
- Targets structures and infrastructure
- Principles for flood avoidance
- Step-by-step instructions
- Mapping information



THANKS TO OUR FLOOD AVOIDANCE WORKGROUP MEMBERS

- DelDOT
  - Bridge Design
  - Transportation Solutions
- DNREC
  - Energy & Climate
  - Coastal
  - Financial Assistance Branch
  - Watershed Stewardship
  - Parks & Rec
- OMB
  - Facilities Management
  - Financial Operations
- Office of State Planning Coordination
- Department of Education
- State Housing Authority

QUESTIONS?

Susan Love
DNREC Division of Energy and Climate
(302) 735-3480
Susan.Love@state.de.us

Michael Powell
DNREC Division of Watershed Stewardship
(302) 739-9921
Michael.Powell@state.de.us

HOW FRAMS WERE CREATED (CONTINUED)

Designation Code (Zone_Type)	Code Description	Zone Description	Flood Elevation or Depth
CE	Combined Flood Hazard Elevation	Elevation of 1%-annual-chance storm surge + 3 feet SLR + possible wave conditions	Elevation in feet relative to NAVD88
CD	Combined Depth	Sheet flow depth, especially due to runup and overtopping of dunes	Depth of water above the local ground
OS	OutSide of SLR Floodplain	Areas of high ground that are not shown as inundated by the analyses; may be completely surrounded by inundated land	N/A
Water	Open Water	Delaware Inland Bays, where no analyses were performed to determine hazard elevation	N/A